UNIVERSITY STUDENTS’ PERSONALITY TRAITS AND ENTREPRENEURIAL INTENTION: USING ENTREPRENEURSHIP AND ENTREPRENEURIAL ATTITUDE AS MEDIATING VARIABLE

Su-Chang Chen, Professor  Email: csc@gms.npu.edu.tw
Ling-Ling Jing, Lecturer  E-mail: llj@gms.npu.edu.tw
Department of Marketing and Logistics Management, National Penghu University of Science and Technology, Taiwan.
Mailing Address: 300, Liu Ho Rd., Magong, Penghu, Taiwan.

Ming-Hung Sung, Master
Institute of Service Management, National Penghu University of Science and Technology, Taiwan.
Mailing Address: 300, Liu Ho Rd., Magong, Penghu, Taiwan.
E-mail: graffitijackal@yahoo.com.tw

Abstract
This study aims to probe into relationship between personality traits and entrepreneurial intention and measure the mediating effect by entrepreneurship and entrepreneurial attitude. A total of 550 questionnaires were distributed to seven universities in Taiwan. After eliminating the questionnaires with incomplete answers and invalid ones, there were 392 validity samples, with a valid return rate of 71.27%. The results indicated that “openness to experience”, “extraversion” and “conscientiousness” positively influence entrepreneurship; “neuroticism” negatively influences entrepreneurship; “agreeableness”, “openness to experience”, “extraversion” and “conscientiousness” influence entrepreneurial attitude; entrepreneurship and entrepreneurial attitude reveal partial mediating effects between “openness to experience”, “extraversion” and “conscientiousness” in personality traits and entrepreneurial intention.

Keywords: Big Five Personality Trait, Entrepreneurship, Entrepreneurial Attitude, Entrepreneurial Intention, University Students.

1. Introduction
By April, 2010, unemployment rate in Taiwan is 5.39%. Unemployment rate of people with educational level of and above university is 5.52% and it increases by 0.74% in comparison to 4.78% in 2008. For prompting by Taiwan’s government policies, higher education have expanded rapidly (Chen, Hsiao, Chang, Shen, and Chou, 2010). Currently, there are 164 public and private universities and colleges in Taiwan. Since 2003, the graduates of and above university are more than 200,000 students every year (Ministry of Education, 2010). New business has been treated as the drive of national economy and it is the base to maintain national economic growth, create jobs, stabilize the society and increase industrial competition. Many countries regard “entrepreneurship” as the solution for economic depression (Gray, Foster and Howard, 2006). Entrepreneurship has been recognized and accepted by economies the world over as the catalyst to boost innovation and growth for an economy (Biju and Vardhan, 2011). Moreover, the change of external economic environment will enhance entrepreneurship. Nowadays, entrepreneurship has become the key word that attaches great attention by governments and workers (Liu and Hu, 2010). In other words, national incomes and change of unemployed population significantly and positively influence entrepreneurship.

Psychologists suggest that human beings’ behavior is influenced by attitude the most. Attitude is the base of a person’s view and explanation toward external things. It is the behavior in advance with emotional intention of direct purposes. Thus, it is necessary to recognize attitude in order to probe into reaction. Many psychologists also suggest that a person’s behavior can be predicted by recognizing his (her) attitude.
What kinds of university graduates have to lead to higher entrepreneurial intention? Can we analyze the individuals’ current personality traits in order to predict their future motive, behavior and events in lives (Costa and McCrae, 1986; Gatewood and Field, 1998). Is entrepreneurial attitude the mediating variable between Taiwan university students’ personality traits and entrepreneurial intention? Based on above, research motives are constructed.

The purposes of this study is to find if university students’ personality traits will positively influence entrepreneurial intention by entrepreneurship and to find if university students’ personality traits will positively influence entrepreneurial intention by entrepreneurial attitude.

2. Literature Review

Correlation between personality traits and entrepreneurship

Personality trait is the individuals’ consistent reaction caused by stimulation of external environment. Dollingers (2003) suggested that entrepreneurship meant to create a new economic organization by innovation under risk and uncertain environment. It was the drive for construction, development and growth of new business. Scale of Big Five personality traits is treated as the most stable scale to measure personality trait. “Agreeableness”, “openness to experience”, “extraversion” and “conscientiousness” of Big Five personality traits significantly and positively influences entrepreneurship; “neuroticism” significantly and negatively influences entrepreneurial attitude (Goldberg, 1981; Peabody, 1987). Based on literatures above, the hypothesis is shown below:

H-1: University students’ Big Five personality traits significantly influence their entrepreneurship.

Correlation between personality traits and entrepreneurial attitude

Attitude is a person’s persistent and consistent intention toward specific subjects. The intention can be positive or negative and influenced by the surrounding (Ajzen, 1988; Robbins, Spence, and Clark, 1991). Therefore, entrepreneurial attitude is a person’s positive or negative intention toward staring new business and it can be measured by cognition, affection and behavioral intention. Regarding individuals’ personality traits, people who can undertake more risk prefer creating their own business. Past studies demonstrate that entrepreneurs had personality traits which could enhance the behavior to start new business. Hu (2008) found that there is significant and positive relationship between “extraversion”, “openness to experience”, “agreeableness” and “conscientiousness” of Big Five personality traits and entrepreneurial attitude; “neuroticism” will significantly and negatively influence entrepreneurial attitude. According to literature above, this study proposes hypothesis below:

H-2: University students’ Big Five personality traits significantly influence the entrepreneurial attitude.

Mediating effect of entrepreneurship and entrepreneurial attitude between personality traits

Personality traits play important roles in entrepreneurial process (Zhao and Seibert, 2006; Zhao, Seibert, and Hills, 2005). People who could undertake more risks preferred creating their own business. However, Huang, Liu and Yang (2010) showed that females’ personality traits would moderate entrepreneurial intention by attitude. Tsai, Hsieh, Lee, and Hsu (2008) suggested that personality traits would indirectly influence entrepreneurial performance by entrepreneurship. Therefore, entrepreneurship can be treated as mediator between personality traits and entrepreneurial intention.

Based on literatures above, the hypotheses are indicated below:

H-3: University students’ Big Five personality traits will indirectly influence entrepreneurial intention by entrepreneurship.

H-4: University students’ Big Five personality traits will indirectly influence
entrepreneurial intention by entrepreneurial attitude.

3. Research Method
This study distributed 158 pretest questionnaires to graduating students in four universities. After the subjects answered the questions, the researcher revised the questionnaire by extreme value analysis, item analysis, factor analysis and reliability analysis, and then distributed the formal questionnaires. There were totally 560 questionnaires distributed to seven universities. After eliminating incomplete and invalid answers, there were totally 392 validity questionnaires; the valid return rate was 71.27%.

Based on literature review, the research framework is shown in Figure 1.

Figure 1 Research framework
The variables were measured as follow:
(1) Personality traits: According to Big Five personality traits of Costa & McCrae (1986) and by citing the scale of Big Five personality traits, this contains 42 items.
(2) Entrepreneurship: According to theories related to entrepreneurship developed by Miller(1983), Lumpkin and Dess (1996), this contains 17 items.
(3) Entrepreneurial attitude: based on the development of attitude proposed by Lai (2004) and related literatures. There are 21 items.
(4) Entrepreneurial intention: according to entrepreneurial intention scale developed by Liñán (2005) and Kolvereide (1996), this questionnaire contains five items.

The scales are based on Likert 5-point scale, ranging from 5 to 1 for “strongly agree”, “agree”, “uncertain”, “disagree” and “strongly disagree”. Cornbach’s $\alpha$ of total items is 0.944. It shows that the degree of reliability of questionnaire is acceptable.

Implementation procedures
This study distributed 158 pretest questionnaires to students in four universities in northern, central, southern Taiwan and offshore island. After the students answered the questions, the researcher revised the questionnaire by extreme value analysis, item analysis, factor analysis and reliability analysis, and then distributed the formal questionnaires. Each representative in universities F and C in northern Taiwan, universities P and Y in central Taiwan and universities CJ and CY in southern Taiwan distributed 80 questionnaires. There were totally 560 questionnaires distributed, and 410 were retrieved, with a return rate of 73.2%. After eliminating 18 questionnaires with incomplete and invalid answers, there were
392 valid questionnaires, with a valid return rate of 71.27%. Figures of data analysis are based on “complete elimination of missing values”.

4. Results

Colinearity test was conducted on independent variables, such as personality traits, entrepreneurship and entrepreneurial attitude, tolerance and VIF, and found that they were all within the acceptable level. Thus, there was no colinearity.

**Personality traits and entrepreneurship**

This study treated personality traits as independent variables and “entrepreneurship” as dependent variable and then conducts regression analysis. The result demonstrates that “openness to experience”, “extraversion” and “conscientiousness” of personality traits significantly and positively influence entrepreneurship. “Neuroticism” significantly and negatively influences entrepreneurship. Explained variance is 47.2%. When “openness to experience”, “extraversion” and “conscientiousness” are higher, entrepreneurship will be higher. The higher “neuroticism” is, the lower entrepreneurship will be. Hypothesis 1 is supported.

By treating personality traits as independent variables and “entrepreneurial attitude” as dependent variable, conducted with regression analysis. The finding indicated that “agreeableness”, “openness to experience”, “extraversion” and “conscientiousness” significantly and positively influence entrepreneurial attitude. Explained variance is 28.9%. Therefore, the higher “agreeableness”, “openness to experience”, “extraversion” and “conscientiousness” are, the higher entrepreneurial attitude will be. Hypothesis 2 is partially supported.

Then, this study regarded personality traits as predictor variables, entrepreneurship as mediating variable and entrepreneurial intention as criterion variable. In Table 1, model 1 is the regression of personality traits on entrepreneurial intention. “Openness to experience”, “extraversion” and “conscientiousness” significantly and positively influences entrepreneurial intention. After including entrepreneurship as independent variable, according to model 3, although “openness to experience” and “conscientiousness” are significant, $\beta$ is lower (“openness to experience” reduces from 0.182 to 0.152; “conscientiousness” reduces from 0.251 to 0.190). Thus, there is partial mediating effect. “Extraversion” is insignificant. Thus, Hypothesis 3 is partially supported.

According to model 1 of Table 1, “openness to experience”, “extraversion” and “conscientiousness” significantly and positively influence entrepreneurial attitude. After including entrepreneurial attitude, as shown in model 5, “openness to experience” and “extraversion” are less influential and become insignificant. It demonstrates that by full mediating effect of entrepreneurial attitude, “openness to experience” and “extraversion” of personality traits influences entrepreneurial intention. As to “conscientiousness”, $\beta$ reduces from 0.251 to 0.132 and it is still significant. It shows that “conscientiousness” influences entrepreneurial intention by partial mediating effect of entrepreneurial attitude. Hypothesis 4 is partially supported.
Table 1: Hierarchical regression analysis

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>t</td>
<td>VIF</td>
<td>β</td>
<td>t</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.032</td>
<td>0.644</td>
<td>1.314</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>0.182</td>
<td>2.846**</td>
<td>2.139</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.159</td>
<td>2.408**</td>
<td>2.278</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.251</td>
<td>3.915***</td>
<td>2.145</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-0.062</td>
<td>-1.227</td>
<td>1.332</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>-</td>
<td>0.446</td>
<td>9.847***</td>
<td>1.000</td>
<td>0.179</td>
</tr>
<tr>
<td>Entrepreneurial Attitude</td>
<td>0.253</td>
<td>0.197</td>
<td>0.268</td>
<td>0.472</td>
<td>0.500</td>
</tr>
<tr>
<td>Adjust R²</td>
<td>0.253</td>
<td>0.197</td>
<td>0.268</td>
<td>0.472</td>
<td>0.500</td>
</tr>
<tr>
<td>F</td>
<td>27.422***</td>
<td>96.966***</td>
<td>24.814***</td>
<td>351.131***</td>
<td>66.157***</td>
</tr>
</tbody>
</table>

*p < 0.05 , **p < 0.01 , ***p < 0.001

5. Conclusions and Discussions

This study found that “openness to experience”, “extraversion” and “conscientiousness” of university students’ personality traits positively influence entrepreneurship; “neuroticism” negatively influences entrepreneurship. In other words, when university students have higher “openness to experience”, “extraversion” and “conscientiousness”, their entrepreneurship is higher. Moreover, “agreeableness”, “openness to experience”, “extraversion” and “conscientiousness” of university students’ personality traits will positively influence entrepreneurial attitude. Thus, when university students have “agreeableness”, “openness to experience”, “extraversion” and “conscientiousness” their entrepreneurial attitude is higher. Moreover, “openness to experience, “extraversion”, “conscientiousness” of university students’ personality traits will positively influence entrepreneurial intention. It is because of the mediating effects of entrepreneurship and attitude. “Openness to experience” and “conscientiousness” reveals partial mediating effect on entrepreneurial intention by entrepreneurship. “Extraversion” is completely based on the mediating effects of entrepreneurship and entrepreneurial attitude. In addition, “openness to experience” will influence entrepreneurial intention by full mediating effect of entrepreneurial attitude. “Conscientiousness” will influence entrepreneurial intention by partial mediating effect of entrepreneurial attitude.

Since entrepreneurship and entrepreneurial attitude are not totally innate and they can be cultivated by education. Therefore, it is suggested that the schools can provide complete entrepreneurial education, and allow university students to have the opportunity to learn organizations of firms, market analysis, product development, fund raising and corporate operation before they enter the society. It might reduce the risk of failure. Besides learning in classes, the schools can construct the institutes by business competition, industry-academy cooperation center, innovation incubation center, skill transfer/authority center and industry-academy cooperation in order to enhance the graduates’ entrepreneurial intention and skills.

There are some limitations in this study. The research subjects can have errors in answers since they have never considered the issue to start business. Future studies can conduct sampling investigation on graduates who have considered starting business.
might avoid the problem above. In addition, there are many kinds of classification of personality traits and this study only treats big five personality traits as criteria. Hence, future studies can conduct analysis by other personality traits.

**Acknowledgment**

The author would like to acknowledge the support of the National Science Council of Taiwan for this research under the project number of NSC 99-2511-S-346-001-MY3.

**Reference**

Zhao, H. & Seibert, S. E. (2006). The